DOCUMENT RESUME

ED 171 271 IR 007 281

TITLE	Selected Papers from the ASIS Conference. November 1978.
INSTITUTION	National Inst. for Occupational Safety and Health (DHEW/PHS), Rockville, Md.
PUB DATE	Nov 78
NOTE	31p.; Contains occasional light and broken type
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Algorithms; *Cataloging; Data Sheets; Government Publications; Health; *Indexing; *Information Dissemination; *Information Needs; Information Systems; Models; On Line Systems; Quality Control; Relevance (Information Retrieval); Research Design; Tables (Data); User Satisfaction (Information)
IDENTIFIERS	*Document Selection Criteria; *National Institute Occupational Safety and Health; NIOSHTIC Computer System

ABSTRACT

The six papers that comprise this document deal with topics related to the National Institute for Occupational Safety and Health (NIOSH) and/or its online document retrieval system, NIOSHTIC. Specific subjects include: (1) a method to catalog multiple sources of NIOSH publications for dissemination; (2) an input rejection algorithm used to provide quality control for NIOSHTIC input; (3) document selection criteria for NIOSHTIC; (4) the development and implementation of a publications dissemination program for NIOSH; (5) a conceptual model for the screening and indexing of documents for a multidisciplinary information system; and (6) an information user needs survey--a decision guide for resource allocation. Among the materials provided with the papers are a NIOSHTIC selection matrix, a relevancy matrix for NIOSH current research system, a quality control defect weighting scheme, and tables presenting the information services of the Clearinghouse for Occupational Safety and Health Information and a summary of areas to be included in an information user needs questionnaire. (JD)

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SELECTED PAPERS FROM THE ASIS CONFERENCE

November 1978

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Ruth E. Grubbs

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Theodore F. Schoenborn

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

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Judith L. Mullaney

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IR007281

Information User Needs Survey -- A Decision Guide for Resource Allocation

Theodore F. Schoenborn

The National Institute for Occupational Safety and Health (NIOSH) is a government research organization, consisting of approximately 900 employees, about 75% of whom are professional or technical. Demands for technical services are increasing faster than the dollars and manpower available. A user needs study will provide the basis for resource allocation decisions for Fiscal Year 79. Needs identified during the survey will be met during Fiscal Year 79 and evaluation of the revised services will be completed during Fiscal Year 80. Subsequent analysis of the usefulness of new information services must be conducted to obtain the best mix of user services subject to resource limitations.

Design of this user needs study will follow the uncontrolled pretest-posttest design for quasi-experimental research. Since NIOSH has research activities in three cities at six separate locations, a stratified sample from each research location will be obtained to identify service needs and information requirements. Once the needs are determined through the initial survey instrument, appropriate services can be instituted. These new services will provide the change or "treatment" which will be evaluated during the posttest evaluation. Services unique to each facility's needs will be evaluated for reprogramming decisions during the annual resource allocation in the program planning process.

IR00728I

Information User Needs Survey -- A Decision Guide for Resource Allocation

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The Clearinghouse for Occupational Safety and Health Information is the technical information center for the National Institute for Occupational Safety and Health (NIOSH). NIOSH is a multidisciplinary research organization with headquarters located in Rockville, Maryland, two sites in Morgantown, West Virginia, and in three sites in Cincinnati, Ohio, as well as ten regional offices. Although each site has different research interests, the Clearinghouse supports information services at all six locations. Table I describes the services provided by the Clearinghouse at each site.

Priorities for information services are determined during the NIOSH program planning process. This system establishes program objectives and milestones for the Institute. Principals in this process are the Institute Director and directors of various staff offices and research divisions. The information user needs survey is the first stage of an evaluation research project which will provide continual feedback about required information services and resources. A systematic process for identifying other services useful to NIOSH researchers and changing or eliminating those being provided makes the best use of the resources available for technical information services. The value of an information user needs survey in this context is that concrete information instead of the expectations of the management will be available for the determination of appropriate service levels. In addition, NIOSH program objectives can be viewed in the context of the staff's perceived need for and satisfaction with the information services and resources available. The user needs survey will be conducted annually so that information gathered can be used to continually modify the mix of user services provided to NIOSH researchers.

The user needs survey has a twofold purpose -- to identify needed information services, and to determine satisfaction with existing services. Identification of needs is necessary for planning new activities and eliminating unimportant services. Determining satisfaction with existing information services establishes a basis for future evaluation and identifies the need for emphasis or de-emphasis of existing services. The portion of the survey identifying needed information services suggests possible activities and asks the respondent to rank the potential services. So that useful new services can be identified, the most important new service is identified by the respondent in a separate question.

Satisfaction with existing Clearinghouse services is measured by a five point Likert type scale ranging from poor to excellent. Both the quality of the service provided and the timeliness of the service are evaluated. A research institution in an environment where research activities are tightly scheduled and new problems are constantly emerging must have access to highly accurate and comprehensive information as quickly as possible. Complete information has no practical value for the researcher

if it is not provided in time for it to be used. Evaluating user satisfaction with existing information services measures the success of the Clearinghouse in meeting NIOSH needs. Table II summarizes the user needs questionnaire.

The questionnaire will be analyzed by tabulating the responses to each question and then interpreting user needs and satisfaction for the total sample. Responses will next be stratified by location and the analysis repeated. In this way, comparisons can be made between each location and average NIOSH response. The effectiveness of Clearinghouse information services can be compared from site to site and satisfaction can be related to the types of services available at each location. This information will provide the basis for changing the mix of services available at each NIOSH site.

Although studies of user satisfaction are not uncommon in the management of information services, interyear comparisons are seldom made and properly interpreted for managerial decision-making. A key facet of this project lies in the subsequent surveys and their interpretation. In order to ensure proper follow-up evaluation, interyear comparisons will be subject to appropriate statistical tests in order to determine whether significant improvements in user satisfaction occur. In experimental design terms, the null hypothesis can be formally stated:

H_o: Satisfaction with Clearinghouse services and resources will not increase when services are modified.

This hypothesis will be tested for each measure of user satisfaction. Numerous statistical tests are available and will not be discussed here. As a control over the reliability of the results, the sample of users surveyed will not be constant from year to year. This will avoid the problem of bias resulting from user satisfaction being related to user involvement in changes rather than the nature of the changes themselves. This follows the uncontrolled pretest-posttest design for quasi-experimental research.

It is anticipated that knowledge of needed services combined with information about satisfaction with existing services and resources will result in a new mix of services with resulting greater user satisfaction. When the data is analyzed in terms of each measure of user satisfaction, however, there is a significant probability that tight resource constraints will cause the measures of satisfaction associated with services not augmented to decrease. Such a phenomenon should not be interpreted as requiring continual flip-flops in service emphasis, but rather would indicate that existing resources are insufficient and must either be increased or an acceptable level and nature of user dissatisfaction determined. If additional budget can be obtained, the user survey will provide information for its proper allocation.

TABLE I

Information Services of
The Clearinghouse for Occupational Safety and Health Information

	Cincinnati			Morgantown		Rockville	Regions
	Taft	Ridge	Federal Building	Mountaineer Campus	Mall	Parklawn	I - X
Systems Maintenance							
NIOSHTIC	yes	no	no	no	no	no	no
Current Research File	yes	no	no	no	no	no	no
Miscellaneous smaller systems	yes	no	no	no	no	no	no
Information Retrieval							
Trained Searchers							
NIOSHTIC	yes	yes	yes	yes	no	yes	no
Current Research File	yes	no	no	yes	no	yes	no
NLM*	yes	no	yes	yes	no	yes	no
SDC*	yes	no	yes	yes	no	yes	no
Lockheed*	yes	no	yes	yes	no	yes	no
BRS*	yes	no	no	no	no	no	no
Subject files of previous searches or responses	yes	no	no	yes	no	no	yes
Specialized bibliographies	yes	no	no	yes	no	yes	no
Library Services							
Reading room	yes	yes	no	yes	no	yes	yes
Reference materials	yes	yes	no	yes	no	yes	yes
NIOSHTIC microfiche	yes	no	no	yes	no	yes	no
Microfiche equipment	yes	yes	yes	yes	no	yes	yes
Translation files	yes	no	no	no	no	yes	no
Acquisition from computer-generated bibliographies							
Inter-library loan	yes	no	no	yes	no	yes	no
Contract	yes	no	no	no	no	yes	no

*Vendor Packages

TABLE II

Summary Table of Information User Needs Questionnaire

	Supply Information	Rank	(Likert type scale)
Profile of Respondee			
Location	x		
Education Level	x		
Profession	x		
Time with NIOSH	x		
Sources Used			
Personal	x		
NIOSH		x	x
Automated Data Bases	x	x	
Literature Searches	x		x
Library Services			
Access	x		
Adequacy			x
Microfiche equipment	x		
Use	x		x
Services			
Use frequency	x		
Quality			x
Timeliness	x		x
Overall rating			x
Information Needs			
New services	x	x	x
New resources	x	x	x

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INPUT REJECTION ALGORITHM USED TO PROVIDE QUALITY CONTROL FOR NIOSHTIC INPUT

Judith L. Mullaney*

ABSTRACT

NIOSHTIC is the National Institute for Occupational Safety and Health's on-line document retrieval system. This system provides access to occupational safety and health literature through abstracts on-line with full-text support.

Because input errors adversely affect the retrievability of information, a weighting algorithm, which ranks the relative importance of input errors in both format and content, was developed. This algorithm provides input quality control and, therefore, insures quality output. Ranking the severity of errors guarantees that input which contains a predetermined number of serious defects will not become part of the NIOSHTIC file. The algorithm combines both errors which affect the retrieval of documents and those related to the legibility of the sytem's full-text support. Application of this ranking algorithm provides the basis for input rejection.

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INPUT REJECTION ALGORITHM USED TO PROVIDE QUALITY CONTROL FOR NIOSHTIC INPUT

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NIOSHTIC is the on-line data base of the National Institute for Occupational Safety and Health. Among its unique features are its extent of coverage, abstracts searchable on-line, and full-text support. Its present input rate consists of 1,000 articles or documents per month which are prepared on contract. An estimated 70-75% of the annual coverage is derived from the current literature. NIOSH designated documents, e.g. NIOSH contract and grant reports, Health Hazard Evaluations, industrial hygiene surveys, comprise the remaining input. Errors are assigned a weight or score because various types of input errors have different implications for retrievability either on-line or in the system's text support. An algorithm which uses ranked/or weighted input errors for document rejection was developed to systematically control quality in every document batch. Application of the algorithm allows batches of documents to be evaluated objectively, thereby reducing some of the inconsistencies that plague document retrieval systems.

The NIOSHTIC Quality Control Defect Weighting Scheme partitions a document into the Formated Data Section, the Keyword Section, and the Abstract Section. Each data element is assigned a defect score relative to its retrievability function in NIOSHTIC and based upon the severity of the defect. Important retrieval elements, such as the NIOSH number, author, reference, and publication date, seriously affect a documents retrievability. Individual defect scores are totaled to yield a total error score for the entire document. An error in any of these fields is cause for rejection of that document. If the total error score for the document exceeds 10, the document is automatically assigned a maximum value of 10.

The algorithm used consists of a modified sequential sampling procedure. In the sequential sampling procedure, a small number of documents (5 to 10) is selected at random. The sample is then evaluated manually according to the NIOSHTIC Quality Control Defect Weighting Scheme. An estimate of the proportional defects is calculated as:

$$\hat{p} = s/10n$$

where s = sum of error scores for all sampled documents in monthly batch
n = number of documents in the batch

A 90% confidence interval about the estimate is determined. The endpoints of the interval are then compared to .02, the maximum acceptable proportion of defects. One of the three outcomes can result from this comparison:

1. $la < lb < .02$
2. $la < .02 < lb$
3. $.02 < la < lb$

where 1a and 1b are the lower and upper endpoints respectively.

Cases 1 and 3 imply that with 95% probability the true defect proportion is less than or greater than .02 respectively. The batch is accepted or rejected accordingly. In case 2, the results are inconclusive and additional documents are sampled and evaluated. This sequential sampling procedure is used to minimize the number of documents evaluated and the associated sampling cost. If the true proportion of defects is close to .02, it can require sampling of a very large number of documents to obtain conclusive results. Recognition of the costs of sampling leads to truncating the procedure when 85 documents have been evaluated. Failure to reject the batch with that large a sample implies that there is a 95% probability that the true proportion is less than .03 and the batch is accepted.

Since the calculations involved on this process are difficult, a program has been written for a Wang 154 programmable calculator. The operator needs merely to enter the number of each type of defect. The calculator applies the appropriate weights, determines the estimate $\hat{p}$, and calculates the confidence interval.

NIOSHTIC

QUALITY CONTROL DEFECT WEIGHTING SCHEME

I. FORMATED DATA FIELD

This section includes the components of a complete citation plus an additional field for internal control. Each of the data elements in this section is ranked according to its importance in document retrieval. The NIOSHTIC number, author, reference and publication date critically affect retrievability within the data base and its text support system. Therefore, the maximum defect score of 10 is assigned to these data fields.

Fields	Defect Scores
NIOSHTIC Number	10
NIOSH Source (Housekeeping field)	5
Title	7
Author (s)	10
Reference	10
Publication Date	10
Submission Date	3

NIOSHTIC

QUALITY CONTROL DEFECT WEIGHTING SCHEME (continued)

II. TEXT FIELD

1. Keyword Section

A maximum of 15 index terms is allowable and must include unique descriptors for a NIOSH-generated document. Software constraints require hyphenation in the keyword field. Therefore, spelling and punctuation inaccuracies and NIOSH description inaccuracies are critical to document retrieval and carry the maximum defect penalty.

Fields	Defect Scores
NIOSH Descriptors	10
Spelling and Punctuation	10
Format - Index Term Sequence	7
Index Terms (non-duplicated)	5

2. Abstract Section

A 150-300 word informative abstract is written for all documents in NIOSHTIC, except subject bibliographies. The abstract incorporates the article's pertinent points and conclusions plus specific chemicals and their corresponding Chemical Abstracts registry numbers. Spelling of agents, processes, or equipment names is as critical in the Abstract Section as in the Keyword Section.

Evaluation Points	Defect Scores
Spelling (agents, process, or equipment names)	10
Grammar	3
Format (CAS number location and typographical errors)	5
Interpretation (OSH bias, informative style)	7
Accuracy (e.g. correctness of CAS number in reference to compound it represents, numerical results)	5

Application of the input rejection algorithm as a quality control mechanism for NIOSHTIC is limited at the writing of this paper. Time and experience will demonstrate its deficiencies and the need for change.

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CONCEPTUAL MODEL FOR SCREENING AND INDEXING OF DOCUMENTS FOR A MULTIDISCIPLINARY INFORMATION SYSTEM

Ruth E. Grubbs*

ABSTRACT

The initial collection of documents for a multidisciplinary information system often emphasizes broad subject coverage which subsequently must be screened by additional parameters such as research disciplines and population studied. These parameters were incorporated into a relevancy matrix at the National Institute for Occupational Safety and Health (NIOSH) for its computerized Current Research File. The matrix also provided the basis for an indexing approach to the system. In addition, it served as a model for screening input into another large NIOSH data base.

The matrix relates the subjects of the research project to the population studied and the research activities involved. Subjects of the research are included in Groups I and II which make up the rows of the matrix. Group I (agents, industrial processes, equipment) is divided into the following three lists: (1) NIOSH priority topics; (2) non-priority occupational safety and health topics; (3) topics that are only peripherally related to occupational safety and health. Group II (diseases, disorders) is divided into two lists--occupational and non-occupational. Components of Group III (population) and Group IV (research activities) make up the columns of the matrix. One of three coded relevance values was assigned at each intercept of the rows and columns. Since the matrix was built into the system's software, the relevance value for each input document is automatically assigned, based on appropriate index terms. As Institute priorities change, the matrix can be altered easily by modifying the software.

IR 007281

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CONCEPTUAL MODEL FOR SCREENING AND INDEXING OF DOCUMENTS FOR A MULTIDISCIPLINARY INFORMATION SYSTEM

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A task force, assigned to the development of a computerized current research system on occupational safety and health, designed a matrix (Figure 1) to help evaluate the relevance of research projects for input. Since the selection of relevant documents concerns other information systems in the National Institute for Occupational Safety and Health (NIOSH), we constructed a relevancy matrix for the Current Research System (CRS) which could be used as a model for screening input for all NIOSH information retrieval systems. In addition, the matrix provided the basis for the Current Research System's indexing vocabulary.

NIOSH performs research on and develops recommended standards for the health and safety hazards encountered by workers at their workplace. The scope of this research is as expansive as that covering the health and safety of people off the job. Each year, NIOSH initiates 100 new research projects and produces approximately 24 new proposed standards. In addition, the Institute annually publishes approximately ten Current Intelligence Bulletins on previously unrecognized hazards. At the outset, each of these efforts requires extensive literature searching in order to avoid duplication of effort as well as discover the status of related ongoing research. Since more than 100,000 research projects are funded each year, a system was needed which allowed NIOSH researchers and project managers to obtain, quickly, information related to their areas of responsibility. However, as we attempted to narrow the vast field of research to fit the NIOSH mission, we discovered the same type of challenge that other multidisciplinary system developers have encountered.

The NIOSH Current Research System, which presently contains 3500 records of ongoing research, attempts to accommodate the needs of both researchers and managers in the Institute. As a result, it contains 20 data fields, combining fiscal and research-oriented information. The output consists of ordered lists which can be sorted on several different fields per search. Present system input includes research notices from the Smithsonian Science Information Exchange and NIOSH projects; however, future plans call for input from several other U.S. and foreign sources.

In addition to the task force, several others assisted in the development of the relevancy matrix. The individual research biases evident in the group further emphasized the need for definitive selection criteria.

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The relevancy matrix, which consists of four major groupings, relates the subjects of the research project (agent, industrial process, equipment, disease, disorder) to the human population studied and the research activities involved (e.g., behavioral science, carcinogenesis). If the research is performed on individuals or groups of people (population), no further linkage is necessary. If no population is mentioned, the subjects are related to the principal research activity.

Subjects of the research are incorporated in Groups I and II which make up the rows of the matrix. GROUP I contains agents, industrial processes, and equipment, divided into three lists. List 1 (L1) contains topics for which NIOSH has developed, is developing, or will develop recommended standards. It also includes agents for which consensus standards have been developed, such as the Threshold Limit Values, established by the American Conference for Governmental Industrial Hygienists. List 2 (L2) includes terms that are pertinent to the field of occupational safety and health, but are not part of NIOSH's standards-setting priorities at this time. Items on this list could easily become priority items in the future and would then be moved to L1. List 3 (L3) contains topics that may be of interest to occupational safety and health researchers, but are not directly related to the NIOSH mission. Examples of these are animal bites, bacteria, viruses, narcotics, and cosmetics.

GROUP II divides diseases and disorders into two lists. List 1 (D1) contains recognized occupational diseases such as asbestosis, silicosis, and angiosarcoma. List 2 (D2) includes all diseases and disorders not on D1.

The columns of the matrix are made up of Group III, Population, and Group IV, Research Activities. GROUP III is divided into three types of population involved in the research: (1) Workers; (2) Itinerant clinical studies--isolated studies of individuals or groups other than workers and not necessarily associated with geographical location; and (3) Urban groups; non-occupational--non-occupational groups studied in intentionally-selected geographical settings.

Group IV includes 18 research activities. This is an open-ended list, based primarily on the contents of the research projects, themselves, as well as principal NIOSH disciplines. The hierarchical levels are mixed and, in some cases, two or more activities are grouped together. For example, Carcinogenesis and Toxicology have separate listings even though Carcinogenesis is a subset of Toxicology. In another case, Teratogenicity and Mutagenicity appear together because they are closely related and are frequently combined in the research projects.

We used the following three coded relevance values in the matrix: (A) Immediate relevance; (B) Future relevance; and (C) Non-relevance. One of these values was assigned to each intercept of the rows and columns. The relevance values were especially designed for NIOSH users.

The matrix and all its lists were built into the system's software and the assignment of relevance values subsequently handled by the computer, based on appropriate index terms. Since up to ten index terms can be used from Groups I and II, we established a hierarchy on which to base the relevance assignments. If any terms from L1 appear in the index terms, the L1 row is used. If no terms from L1 appear, terms from D1 are considered next, followed by L2, L3, and finally D2. Only one selection can be made from Group III, so there is no problem in this linkage. However, up to three research activities from Group IV may be used for indexing purposes. Only the first of these is used for the relevance assignment. As Institute priorities change, the matrix can be easily changed by modifying the software, thereby eliminating the need for re-indexing what is already in the system.

Even though we plan continual monitoring and refinement of the matrix, it has already eliminated most of our screening problems for the Current Research System. In addition, we are testing a modification of it for NIOSHTIC, NIOSH's bibliographic information retrieval system. Results, at this time, point to the anticipated success of the matrix.

ACKNOWLEDGEMENT

The author wishes to thank Joseph F. Mastromauro of NIOSH, who, as the Task Force Chairman, conceived the matrix approach and directed the early stages of its development.

FIGURE I. RELEVANCY MATRIX FOR NIOSH CURRENT RESEARCH SYSTEM

A--Immediate Relevance

B--Future Relevance

C--Non-relevance

Subjects	Lists	III. POPULATION			IV. RESEARCH ACTIVITIES																
		01 Workers	02 Itinerant Clinical Studies	03 Urban Groups; Non-occupational	01 Behavioral Science	02 Biochemistry, Metabolism, Physiology	03 Carcinogenesis	04 Chemical Sciences	05 Control Technology	06 Diagnosis, Prevention, Therapy	07 Engineering	08 Environmental Biodegradation	09 Ergonomics	10 General Pollution	11 Information Science	12 Mathematical Sciences	13 Physics	14 Safety	15 Toxicology	16 Training	17 Teratogenicity, Mutagenicity	18 Pathology	19 Administration
I. AGENTS,	L1	A	A	A	A	A	A	A	A	A	A	B	A	C	A	A	A	A	A	A	A	A	A
INDUSTRIAL PROCESSES,	L2	A	B	B	B	B	B	B	B	B	B	C	B	C	B	B	B	B	B	B	B	B	B
EQUIPMENT	L3	A	B	C	C	C	C	C	C	C	C	C	C	C	C	C	C	B	C	C	C	C	C
II. DISEASES,	D1	A	A	B	A	A	A	A	A	A	A	B	A	B	B	A	A	A	A	A	A	A	A
DISORDERS	D2	A	C	C	C	C	C	C	C	C	C	C	C	C	C	B	C	C	C	C	C	C	C

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DEVELOPMENT AND IMPLEMENTATION OF A PUBLICATIONS DISSEMINATION PROGRAM FOR THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

Vivian Kay Morgan and Theodore F. Schoenborn

ABSTRACT

The continuing increase of research published by the National Institute for Occupational Safety and Health established a need for a formal Institute publications dissemination program. As a major component of this program, the Institute developed a plan to ensure that publications were distributed to the intended audience as well as any peripheral audiences.

The dissemination program includes the development and maintenance of a sophisticated mailing list, use of secondary disseminators, and evaluation of these activities. This mailing list enables the Institute to direct publications to the appropriate audience according to industrial classification, education and experience, as well as other parameters. Secondary dissemination is provided through announcement of availability in appropriate newsletters, journals and trade publications. Evaluation of these direct and indirect distribution methods is necessary to monitor their continuing usefulness.

IR 007281

DEVELOPMENT AND IMPLEMENTATION OF A PUBLICATIONS DISSEMINATION PROGRAM FOR THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH

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The National Institute for Occupational Safety and Health was established by the Occupational Safety and Health Act of 1970 and is charged with protecting the health and safety of America's working men and women. As part of this charge, the Institute initiated a formal publications development program in Fiscal Year 1972 to disseminate the results of research, technical assistance, and other program activities. During this first year the Institute published only two technical reports. The publications program grew from a total printing of 90,000 copies of 26 publications in Fiscal Year 1973 to 750,000 copies of 125 publications in Fiscal Year 1977.

The majority of Institute publications are intended for safety and health professionals in Federal, State, and local governments; industry; labor organizations; and universities. However, Institute publications are also distributed to managers, supervisors, and employees. Because of the increased number of NIOSH publications and the size of the intended audience, it was necessary to develop a dissemination policy so that publications developed by the Institute could reach those in most need of this information.

A mailing list was established when the Institute began its publications development activity. Originally this mailing list consisted of individuals who expressed an interest in the Institute's research and technical assistance activities. We provided each person on the list with a single copy of each Institute publication. However, this procedure shortly became unmanageable due to the increased interest in occupational safety and health research activities. It was then necessary to develop a single and more sophisticated mailing list which could be used to announce the availability of Institute publications as well as provide for direct selective dissemination to the most appropriate individuals. Attendance at scientific and technical conferences also permitted us to compile names for the new mailing list. Originally we were not selective about whom we added to our mailing list, since we wanted to inform as wide an audience as possible about the availability of Institute's publications.

Parameters for the NIOSH mailing list were developed through a Mailing List Questionnaire (OMB 68-R151R), which was developed under contract by John Short and Associates. This questionnaire contains the following information necessary to develop individualized direct mailing lists for each Institute publication.

Respondent's Affiliation

The respondent's affiliation is assigned a Standard Industrial Classification (SIC) number by NIOSH based upon information provided. As many as three SIC classifications can be used for individuals associated with multi-purpose companies.

Respondent's Background

Level of sophistication of the respondent is determined by experience and education as outlined by the respondent. Also, the two medical professions, medicine and nursing, can be singularly broken out for direct mailings.

Respondent's Present Occupation

Several parameters can be used to indicate whether or not the respondent is directly associated with occupational safety and health decision-making responsibilities or serves only in a management or technical position. Additionally, these questions can be used to separate direct users from channel groups, i.e., those people who acquire a publication for other people's use.

Respondent's Choice

Targeting an audience by their choice of publications-type is an additional parameter. For example, some people may want to restrict their acquisitions according to the size or type of publication, e.g., book, pamphlet, booklet, brochure, employee-oriented, management-oriented, etc.

As outlined above, the respondent's affiliation, background, present occupation, and choice provide us with information upon which to develop mailing lists for specific publications. Additionally, the scope of the dissemination strategy can be narrowed or expanded. For example, affiliation permits NIOSH to select appropriate SIC classifications and then begin the process of narrowing the list based on the background, present occupation, and publication-type requested. If the resultant list is too restricted, the strategy can be expanded by modifying the various steps within the process.

Profile of NIOSH Mailing List Respondent's

89% hold a completed degree past high school

76% have five years experience or more in the field of occupational safety and health

82% apply NIOSH publications directly to their job

84% indicate they frequently refer to NIOSH publications in their work

As shown above, 82% of our mailing list respondents were applying our publications directly to their job. Therefore, we believe we have reached our goal of directing our mailing list to individuals who most need our material.

Simultaneous to the development of this specialized mailing list, we also began the process of locating organizations and scientific, trade, and professional journals that could serve as secondary disseminators. Secondary disseminators, by virtue of their scope, could announce the availability of our publications to an audience we could not reach directly.

We also believe it is important to reach individuals who can put our material to good use even though they may not be safety and health professionals. In particular, these are persons employed in small manufacturing and service companies that do not employ safety and health professionals. In 1973, businesses employing fewer than 500 persons accounted for over 75% of all employment and these workers are most likely to be without occupational safety and health services. Therefore, we purchase mailing lists for direct dissemination and announce publications through trade association journals and organized labor publications to provide this group with practical information that can be implemented on the job.

In summary, we plan to continue to refine our dissemination program so that the Institute's publications continue to be read by those responsible for protecting the health and safety of working men and women. Only through proper dissemination techniques can the Institute be assured that its publications are being read and used by the most appropriate individuals. As outlined by the President's Science Advisory Committee in 1963, "Transfer of information is an inseparable part of research and development."

DOCUMENT SELECTION CRITERIA FOR NIOSHTIC, AN ON-LINE OCCUPATIONAL SAFETY AND HEALTH INFORMATION SYSTEM

John E. Gilmore and Theodore S. Schoenborn,
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U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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Collection of documents for NIOSHTIC requires selection from the entire spectrum of technical literature. Because NIOSH examines all aspects of adverse effects upon workers, whatever the agent, the greatest volume of information input is selected from sources which do not have a primary occupational safety and health orientation. NIOSH applies information from all disciplines to benefit workers.

Selected criteria are, therefore, predicated upon types of information to avoid the severe limitations imposed by requiring a strict contextual OSH relationship. The selection criteria are used to screen current sources and evaluate new ones.

To apply a uniform selection process to this broad array of literature these criteria are incorporated as a matrix. Selection is made if topic and type of information in a document intersect in the matrix. Consequently, topical information selected includes, but is not limited to, known hazards or specified subjects.

Currently about 400 serials in the primary technical literature annually provide 8,000-10,000 additions to NIOSHTIC. Types of information selected with the criteria matrix include epidemiological studies of diseases and disorders, pathology, toxicology, analytical chemistry, engineering control and design, behavioral and motivation studies, education and training, medical monitoring and diagnostic techniques and safety research and practice. Only when this diverse information is identified, collected, assimilated with NIOSH research and reduced to practice does it contribute to safe and healthful working conditions.

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DOCUMENT SELECTION CRITERIA FOR NIOSHTIC, AN ON-LINE OCCUPATIONAL SAFETY AND HEALTH INFORMATION SYSTEM

John E. Gilmore* and Theodore F. Schoenborn*

NIOSHTIC was designed to support National Institute for Occupational Safety and Health's (NIOSH) research. NIOSH conducts research aimed at identifying and controlling occupational safety and health problems. The information required for this research is multidisciplinary and covers such fields as engineering, medicine, epidemiology, toxicology, pathology, chemistry, and behavioral science.

The system presently contains about 75,000 documents, including research published in the open literature, NIOSH published documents, and unpublished research reports. NIOSHTIC contains the most comprehensive subject-retrievable file of unpublished and published occupational safety and health (OSH) information in the world. Over three-quarters of this information is derived from multi-disciplinary coverage of research and technical reports.

Information applicable to OSH is not clustered in a discrete body of literature. So the difficulties associated with the development of a selection strategy resulted from the need to cover this broad array of sources, and to identify the kinds of information sought. Selection criteria were predicated upon types of research and program activities, not topics. This was done to avoid the severe limitations imposed by requiring the presence of strict contextual OSH relationships or specific topics.

The selection criteria are also applied to all sources reviewed. Currently about 450 serials provide 10,000 documents yearly. Potential new sources are evaluated in terms of the likelihood of their providing original research bearing on OSH research interests. Both selection criteria and the sources reviewed are revised periodically to ensure applicability.

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Selection criteria must be linked closely to NIOSH's present and projected research programs. Consequently, a document is selected if it contains the information types included in the matrix. Topics may be any agent, any process or any equipment found in the workplace. Work-related illnesses or injuries are topics also sought but the types of information desired are the same.

NIOSH programs support research to assure safe and healthful working conditions for all workers. Research, development, training, manpower development and technical services are the broad program areas of NIOSH. This responsibility requires, information from many disciplines and fields of study. In support of these programs NIOSHTIC provides information utilized to evaluate hazards, determine biological effects, support medical diagnosis, monitor effects, measure hazards physically and chemically, and to control hazards using chemical or physical methods including redesign of equipment or processes. This information is represented in the columns of the matrix as Types of Information, which may be roughly equated with academic disciplines when contrasted with researh subjects.

As a selection tool, the matrix is a conceptual guide to the document screener. It is both a prescriptive guide and filter. As a guide, it directs attention to current interests of NIOSH research. As a filter, it provides for selection of literature. For example, information on the toxicity of pesticide is not of interest if it relates to effectiveness as a pesticide. Information on non-pest toxicity of a pesticide is of interest because we screen for potential adverse effects on humans.

The overriding concern for selection is: Does this information have potential to serve OSH needs? To illustrate these principal needs and apply them as selection criteria they are incorporated into a matrix. Use of the matrix

provides a uniform selection process for a diverse body of literature with variant terminologies while assuring quality in relevance and completeness of scope. It is an extremely compact way to organize decision logic for selection criteria in a multidisciplinary information system such as NIOSHTIC.

NIOSH

NIOSHTIC SELECTION MATRIX

NIOSH current research interests are incorporated as types of information in the matrix below. These comprise the basic framework of minimum interests to be considered in relation to the NIOSHTIC mission to assimilate all information which may be useful in reducing hazards of any kind to workers in any situation.

TOPICS				TYPES OF INFORMATION
1. Agents-i.e., NIOSH Criteria Document & Current Intelligence Bulletin subjects, OSHA regulated substances.	2. Processes-Industrial procedures or processes used in manufacturing or control.	3. Equipment used in control or personal protection.	4. Work-related diseases, disorders, or injuries.	
				1. BEHAVIORAL SCIENCES - Studies in psychology of workers, worker motivation, stress, and group dynamics.
				2. BIOCHEMISTRY, PHYSIOLOGY, AND METABOLISM - Changes in bodily processes in humans or animals after exposure.
				3. CHEMISTRY INFORMATION - Qualitative and quantitative analytical methods, field sampling methods, and information about decomposition products.
				4. CONTROL TECHNOLOGY - Control of industrial agents, processes, and equipment to reduce hazards.
				5. EDUCATION - OSH curricula physicians, industrial hygienists, nurses, safety engineers, and related technicians.
				6. ENGINEERING - Design, construction, and use of materials, equipment and processes.
				7. EPIDEMIOLOGY - Incidence and distribution information about diseases, disorders, and injuries among workers.
				8. ERGONOMICS - Work measurement as it relates to equipment, machines, environment, and physical stress.
				9. OCCUPATIONAL MEDICINE - Case histories, clinical reports, monitoring, and diagnostic techniques.
				10. OCCUPATIONAL SAFETY AND HEALTH PROGRAMS - Programs in medical monitoring, OSH nursing, health education, promotion of OSH awareness, and all other aspects of the delivery of health services which enhance the workers' health and safety.
				11. PATHOLOGY - Structural or functional changes in tissues and organs caused by occupational hazards or diseases.
				12. PHYSICS - Research on ionizing and non-ionizing electromagnetic radiation, noise, vibration, and other physical agents which contributes to controlling their effects.
				13. SAFETY - Protection of workers, machine guarding; personal protective devices; work practices (sanitation and cleanup handling, use, emergency procedures, storage, and hazard labeling) and case studies.
				14. TOXICOLOGY - Adverse effects of exposure including carcinogen teratogenic, and mutagenic effects.

Method to Catalog Multiple Sources of Government Publications for Dissemination

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ABSTRACT

Charlene B. Maloney and Theodore F. Schoenborn*

Available NIOSH publications have increased from two in 1970 to over 400 at the end of 1977. This growth created a need for a systematic method to report multiple sources of availability. The catalog meets an in-house need to identify requests for publications which use contract number, GPO stock number, NTIS number, or NIOSH publication number rather than title.

This system provides up-to-date information concerning the availability of NIOSH publications. It provides NIOSH publication title and number, Government Printing Office stock number, National Technical Information Service stock number and NIOSH contract numbers in separate combinations. It also provides information as to whether a NIOSH publication is "out of print." The most useful combination of the 15 different items of information available are discussed.

This system serves as a basis for a publications catalog used to disseminate information about various sources of NIOSH documents to the general public and scientific community. In addition, the catalog provides the requester information about the cost and availability of publications.

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METHOD TO CATALOG MULTIPLE SOURCES OF GOVERNMENT PUBLICATIONS FOR DISSEMINATION

CHARLENE B. MALONEY AND THEODORE F. SCHOENBORN

During the period 1970 - 1977, the National Institute for Occupational Safety and Health developed over 400 technical and research publications, health and safety guides, good work practices, and pamphlets. As employees and employers learn more and more about their own health and safety problems, demand has increased for information on all phases of occupational safety and health. To meet this need and to simplify the processing of publication requests, an identification system listing NIOSH publications and their availability status and prices was organized. This system also provides the NIOSH dissemination staff access to current information regarding each NIOSH publication.

Past experience indicates that the Clearinghouse for Occupational Safety and Health Information receives over 55,000 letters and 5,000 telephone requests per year. The requesters refer to publications not only by their NIOSH publication number, but often ask for NIOSH publications by title, Government Printing (GPO) or National Technical Information Service (NTIS) stock number, or by NIOSH contract number. To efficiently and accurately respond to such varied requests, cross-references of publication titles, GPO stock number, NTIS stock number and NIOSH contract numbers with the NIOSH publication numbers were needed. The NIOSH publication number assigned to every publication does not change; therefore, this number is used as a guide for referencing all NIOSH publications and is easily adapted to a cross-reference numbering system. These listings were set up in numerical order by the NIOSH publication number, GPO stock number, NTIS stock number, or NIOSH contract number; titles are also listed alphabetically.

Information was gathered and assembled according to NIOSH publication numbers. Each publication was identified that was available from GPO, and their stock number and price were recorded for each of these publications. Identification as to the availability from NTIS was also gathered and recorded. Often NIOSH publications may be the result of a NIOSH research contract so identification by contract numbers was also included.

Once the guidelines had been set up as to the types of reports needed from the system, a systems' analyst was contacted to discuss the computerization of this information. The requirements of the system were defined. The value of such information to the occupational safety and health community became so apparent, that it was decided to develop a catalog that could provide a cumulative current information list of NIOSH publications including their availability from government sources and each source's price.

The NIOSH publications catalog system has the capability of providing 15 different items of information. The most frequently used item organizes the publications by NIOSH publication number. This system is the primary tool used for inventory control and source of out of print publications by the publications dissemination staff and for management information by NIOSH staff. Both the general public and NIOSH researchers use the alphabetical list of publications sorted by the type of document such as criteria documents, health and safety guides, and others listing NIOSH numbered publications.

All NIOSH numbered publications are indexed by subject. The alphabetical subject listing is used in the publications catalog to facilitate public access to publications. It is also used as a training aid for new Clearinghouse personnel. The listing of the cross-references to NIOSH publication number from GPO stock number, NTIS stock number and NIOSH contract number are used exclusively by the publications dissemination activity in order to quickly respond to requests for NIOSH publications. Other items of information can be developed from the material contained in the data base if necessary. Maintaining such an index on magnetic media allows for flexibility in reporting format. In addition, it facilitates accuracy in available information by the ease of file update procedures.

The in-house printouts contain complete cross-reference information. If the request refers to a GPO stock number, the system provides not only a cross-reference to the NIOSH publication number, but also lists the complete title, price from GPO, contract number, NTIS number and price. This complete cross-reference guide is quick and accurate. The system also provides a complete list of publications that are only available from NIOSH, GPO and/or NTIS.

The NIOSH Publications Catalog is published as an accurate, efficient and up-to-date guide for anyone to obtain any NIOSH numbered publication from the listed sources. Also, the user is able to identify NIOSH publications of interest from the subject index guide. From this point he refers to the NIOSH numbered list to determine the availability of the publication

desired. He can rapidly determine from the availability column where he can obtain this publication or if the publication is no longer available and noted as "out-of-print." If a publication is available, this system provides not only the various government sources for that publication, but also the appropriate cost and stock number.

This catalog, as it is updated, is published in cumulative form. All price changes and availability changes are made before reprinting so the catalog offers the user the latest information concerning all publications.